

Date: Mon, 7 Jun 93 13:41:00 PDT  
From: Info-Hams Mailing List and Newsgroup <info-hams@ucsd.edu>  
Errors-To: Info-Hams-Errors@UCSD.Edu  
Reply-To: Info-Hams@UCSD.Edu  
Precedence: Bulk  
Subject: Info-Hams Digest V93 #692  
To: Info-Hams

Info-Hams Digest                      Mon, 7 Jun 93                      Volume 93 : Issue 692

Today's Topics:

                    ALERT: Major Solar Flare Alert - 07 June  
    All About Air Force 1 Radio Communications for hobby listeners  
                    HW-100 versus HW-101 ???  
                    tuning an HF rig  
                    WANTED FT-101ZD, Radios in movies

Send Replies or notes for publication to: <Info-Hams@UCSD.Edu>  
Send subscription requests to: <Info-Hams-REQUEST@UCSD.Edu>  
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Info-Hams Digest are available  
(by FTP only) from UCSD.Edu in directory "mailarchives/info-hams".

We trust that readers are intelligent enough to realize that all text  
herein consists of personal comments and does not represent the official  
policies or positions of any party. Your mileage may vary. So there.

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Date: 7 Jun 93 17:33:57 GMT  
From: news-mail-gateway@ucsd.edu  
Subject: ALERT: Major Solar Flare Alert - 07 June  
To: info-hams@ucsd.edu

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MAJOR SOLAR FLARE ALERT

ISSUED: 17:15 UT, 07 JUNE

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\* Low to Moderate Impact Possible \*

MAJOR ENERGETIC EVENT SUMMARY:

( All times are valid for the UT day of 07 June )

Flare Size: Class M5.4/2N

Location: S09W30 (Region 7518)

Tenflare: 1,100 sfu at 1409 UT. Duration: 42 minutes

SESC Times: Begin=07/1351 UT, Peak=07/1425 UT, End=07/1443 UT

(SESC Times are based on a half-power-point system)

Sweeps: Type II (Importance 3). Estimated shock velocity: 1200 km/sec.

Type IV (Importance 3).

Protons: Response observed at > 10 MeV (presently at approx. 4.5 pfu)

#### PRELIMINARY X-RAY TIME PROFILE DATA AND ESTIMATED STATISTICS:

BEGIN (XRAY)	MAX (XRAY)	END (XRAY)	DURATION	INTEG. FLUX	SWF DUR.
-----	-----	-----	-----	-----	-----
1351 (B5.0)	1425 (M5.4)	1509 (C9.7)	061 MIN.	0.110 J/m <sup>2</sup>	056 min

NOTE: The xray time profile data above is not based on the half-power-point system, but is intended to give a general idea of the duration of the entire event, from the start to the end when xrays fall below M-class levels. Integrated x-ray flux covers the interval from start to end.

#### SYNOPSIS:

Region 7518 (S09W30) spawned a class M5.4/2N tenflare at 14:25 UT. This event was accompanied by major Type II and IV sweeps (both importance 3) and a 42 minute tenflare reaching 1,100 sfu at 14:09 UT. A strong SWF was also observed in conjunction with this flare, affecting frequencies as high as approximately 12 to 15 MHz. Protons at greater than 10 MeV began arriving around 16:05 UT and are presently running at about 4.5 particle flux units (pfu).

Region 7518 did not show any strong signs of producing a major flare. It has been associated with the usual internal motions and gradual growth over the last several days, although nothing particularly significant developed. This is the first M-class event observed from Region 7518. Strong magnetic gradients persist in this group, which raises some suspicions regarding its potential future volatility. Minor M-class flares are expected to dominate from this region. The ability of this region to produce additional major-category events is still unresolved and of some question.

#### POTENTIAL TERRESTRIAL IMPACT ASSESSMENT:

The following tables depict the preliminary estimated potential for

terrestrial impacts in various categories. These tables are valid only for the flare described and do not include assessments for previous influential flare events.

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POTENTIAL MAGNITUDE OF DISTURBANCE  
-----

HIGH : 10 %  
MODERATE : 40 %  
LOW : 30 %  
NONE : 20 %

-----  
OVERALL ARRIVAL PROBABILITY : 75 %  
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ESTIMATED WINDOW OF SHOCK ARRIVAL IF SHOCK ARRIVES

MINIMUM	EARLY	PREFERRED	LATE	MAXIMUM
09/0000 UT	09/0800 UT	09/1800 UT	10/0200 UT	10/1000 UT
APRIL	APRIL	APRIL	APRIL	APRIL
10 %	40% PROBABILITY	40% PROBABILITY		10 %

-----  
POTENTIAL FOR >10 MEV PROTONS  
-----

HIGH FLUX : 1 % > 100 PFU  
MODERATE FLUX : 19 % > 10 PFU  
LOW FLUX : 80 % > 1 PFU  
NONE : 0 % <= 1 PFU

OVERALL ARRIVAL PROBABILITY: Observed

-----  
POTENTIAL FOR >100 MEV PROTONS  
-----

HIGH FLUX : 0 % > 100 PFU  
MODERATE FLUX : 0 % > 10 PFU  
LOW FLUX : 5 % > 1 PFU  
NONE : 95 % <= 1 PFU

OVERALL ARRIVAL PROBABILITY: 1 %

-----  
EST. POTENTIAL GEOMAGNETIC IMPACT  
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SEVERE STORM : 10 %  
MAJOR STORM : 40 %  
MINOR STORM : 30 %  
ACTIVE OR LESS : 20 %

-----  
PROBABLE SI ASSOCIATION : 75 %

-----  
EST. POTENTIAL IONOSPHERIC IMPACT  
-----

LOW LATITUDES : MINOR  
MIDDLE LATITUDES : MINOR - MAJOR  
HIGH LATITUDES : MAJOR  
POLAR LATITUDES : MAJOR

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ESTIMATED GLOBAL IMPACT: MINOR - MAJOR

ESTIMATED PRELIMINARY FORECAST PEAK PLANETARY A-INDEX: 42

ESTIMATED POTENTIAL DURATION OF DISTURBANCE IF IT ARRIVES: 24 HOURS

EST. PROBABILITY FOR GEOSYNCHRONOUS SATELLITE MAGNETOPAUSE CROSSINGS: 55%

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Date: 7 Jun 93 17:35:01 GMT  
From: usc!howland.reston.ans.net!noc.near.net!transfer.stratus.com!jjmhome!pig!  
die@network.UCSD.EDU  
Subject: All About Air Force 1 Radio Communications for hobby listeners  
To: info-hams@ucsd.edu

>>In article <C803Hr.Kzv@ms.uky.edu> Harold Peach, hgpeach@ms.uky.edu  
>writes:  
>> It seems most of the comms on these frequency pairs are the  
>>aircraft communications officer setting up a phone patch. Granted  
>>there are sometimes conversations carried out on these frequencies,  
>>but it seems most conversations are carried out on other frequencies  
>>once the patch is in place. The communications officers sometimes  
>>make reference to having x number of calls in progress.  
>>

#### Nationwide

The UHF NBFM system Harold Peach mentioned (on 415.7/407.85) is code named "Echo Foxtrot", or "Nationwide" (the later name distinguishes it from the "Washington Area" system used for communications with White House limos and staff cars). It provides full duplex clear voice coverage over most of the continental US to VIP aircraft in flight (SAM aircraft - Special Air Missions - which fly out of Andrews AFB). It links them to a console at the White House Switchboard ("Crown") in the Old Executive Office building basement from which phone patch connections can be made to telephones at the White House, on the commercial POTS/DDO network, various other federal telephone systems, and occasionally the DSN (Defense Switched Network - formally Autovon). (E/F is not an Autovon system or just intended for Autovon patch use).

The system is operated by the White House Communications Agency (WHCA), and AT&T. Ground sites (there are about 30 of them) for the E/F system are located on AT&T microwave towers throughout the US and are connected by leased lines to a tech control console ("Crown Control") that is part of the White House Switchboard ("Crown" or "Signal"). Each individual site can be separately keyed from the console and patched into a call, thus the system is capable of handling several calls at

once although the aircraft involved have to be far enough apart not to interfere with one another.

The E/F system is completely manual at both ends, call setup and ground site selection is done by operators. On the ground the operators are WHCA/White House switchboard operators, on the aircraft they are CSO (Communication System Officers) who are military NCO's (tech sergeants mostly).

The E/F system is in-the-clear UHF NBFM full duplex voice. The aircraft often push-to-talk keys its transmitter, so it only transmits when the party on board is talking. The ground site usually transmits continuously for the duration of the call. The system has been recently used with STU-III's for security, but apparently not too successfully. There have been occasional attempts in the past to use other kinds of secure voice but most calls are still in the clear. Recent White House staff people who use the system have been made aware that listening to it is quite popular among scanner hobbyists and have been fairly careful about what they say, but when the system was first installed in the late 60's and early 70's there were some very interesting conversations on it.

E/F antennas on AT&T towers are small and not very conspicuous but they can be recognized if one knows what they look like. They are always mounted at the top of the tower near the Hogg horns. There are usually three antennas, two small ground planes and a short vertical pole mounted above them and three or four feet apart.

Air Force One mostly uses the E/F system for actual phone connections when it is out of range of other systems or there is extremely heavy traffic on them (but it always maintains contact via E/F when in range of a ground site as backup anyway), and has in the past sometimes used E/F as a communications order wire to set up calls on the other systems. The Bush conversation with Senator Byrd referred to in the summer 1992 Washington Post article (reproduced and discussed extensively in these newsgroups) about scanner listeners tuning in to the President was one of the relatively rare recent presidential calls on this system (the call took place in August 1990). That call was probably put on E/F due to very heavy traffic on the other lines.

>>Now the question: What frequencies are used once the calls are in place?  
>>

There are two main systems used for most of the actual traffic to AF-1:

Secure UHF satcom

The primary AF-1 high level voice link is the secure UHF military tactical satellite voice system. This provides two (on the 747s 28000 and 29000) (and one on the Gulfstream C-20's favored for shorter flights by Clinton) 16 kbs MSK CVSD secure digital voice circuits using Vinson KY-58 crypto gear (or some interoperable equivalent). These duplex voice circuits are relayed via the 500 khz wideband (NCA) transponder (or used to be) on various of the military UHF Fleetsats/Leasesats; which one depending on where the President is going. (A popular one is the 105 West bird at 262 mhz.). Just like the E/F system, the aircraft end of the UHF secure voice link is run in push to talk mode and the carrier only comes on when someone on the aircraft talks.

These two secure satellite phone links connect to the White House via a ground station at Camp David (code named "Cactus") and are connected to parties on the ground via the White House Secure Voice Switchboard (code named "Royal Crown"). These circuits are the primary voice links from the plane for the President and senior members of his staff, and much (but not all) high level traffic is routed via these links. Calls dispatched to these circuits are usually indicated by such phrases "put it on Royal Crown". As far as I know, most or all of these calls are handled by operators at both ends of the circuit and not directly dialed.

This system was only made operational in 1987, and before it it came into use the previous secure satellite system (which dated in part from the LBJ era - 1968 or so) provided such poor audio quality that it was rarely used and calls from the President and his senior staff could be overheard on the clear voice systems regularly. Now this is rare.

Most of the other SAM VIP aircraft used by high level government officials also have this secure UHF satellite capability (one channel mostly) and use it, either via Camp David or Andrews (Brandywine) to handle high level secure traffic. The system is apparently being converted to use narrowband (5 khz) channels and narrow band vocoded voice (2.4 or 4.8 kbs) rather than the 16 kbs FSK CVSD voice in 25 khz channels (this makes possible use of less transponder power and more conversations on the satellite at once).

The UHF tactical system also provides a secure data/fax capability.

#### UHF LOS

The second system, the UHF-LOS (Line Of Sight) system, is used to provide up to 12 in-the-clear full duplex voice grade telephone circuits via a FM-FDM-SSB link in the 225-400 mhz band to Ground Entry Points (GEPs). The GEPs are located on AT&T microwave towers at hardened underground switching centers (nuclear bomb proof bunkers) which are mostly located along the routes of the old hardened transcontinental coaxial cables. There are also GEPs located at some

military bases and the various underground command and control bunkers (such as site R). GEP coverage of the US is less extensive than the E/F coverage but has been provided along most routes that AF-1 often travels. There are GEPs in other places around the world outside of the continental US as well.

The UHF-LOS system was first installed in 1963 and is very old. Its primary function (in this capacity code named "Combat Ciders") was providing communications for the PACCS flying command post aircraft (Lookingglass, Scopelight and the like) which orbited various parts of the US on 24 hour airborne alert to provide backup nuclear command and control capability. It was their primary connection with the DSN (Autovon) network. (The command post aircraft also had a 56 kbs FSK single channel secure full duplex digital voice link in the 225-400 mhz range to the GEP's (KY-3), but this capability has not been observed in use from AF-1).

The UHF-LOS system was designed to provide air-to-air relay of the 12 channel UHF FDM multiplex signal in addition to the air to ground connectivity. This capability was extensively used for years by AF-1 as it crossed the Midwest (Kansas/Nebraska area where Lookingglass orbited) to provide UHF-LOS voice circuits via the Lookingglass flying command post as a relay. It has also been used routinely when the President travels abroad to link AF-1 to the Nightwatch nuclear command and control plane that always accompanies him when he is outside the US; and used to extend the range of GEPS by using the Nightwatch as a relay to link to GEPs that are too far away for AF-1 to reach directly. It has also been used to link AF-1 to the backup plane (usually 29000) that also accompanies the President when he flies abroad. Sometimes both AF-1 and the backup AF-1 have been simultaneously linked to a GEP via the Nightwatch aircraft.

The White House version of the UHF-LOS system (called "Nightwatch" and in the LBJ area "Chandelier Circuits") provides a group of 12 voice grade circuits with full single frequency (2600 hz) signalling and DTMF dialing. These circuits are carried on a full duplex FM-FDM-SSB signal on various pairs of rf channels in the 225-400 mhz band (the channels are code named "RF-1" through "RF-9") (the channels used for the PACCS aircraft are on different frequencies, but otherwise similar). The SSB voice channels are located on alternating upper and lower sideband pairs in the 12-60 khz range, and there is an orderwire (called "admin") from 0-4 khz used to coordinate GEP transitions as the plane flies from the coverage of one site to the next.

The GEP UHF-LOS ground stations use manually operated radios run by a telco tech located at the site who manually patches through the multiplex gear to special hardened Nightwatch leased lines from the GEP

site that terminate at a tech control center colocated with a hardened DSN switch near Andrews AFB. There are undoubtedly also other routing and patching options to provide nuclear survivability. The GEP sites and the tech control center use standard military rotating tactical call signs (such as FIREPLUG or CALLIOPE) on the orderwire ("Admin") which are changed every 24 hours. AF-1 always id's as "AF-1".

UHF LOS ground stations (GEPs) that are located on AT&T microwave towers mostly use very characteristic thick black (or copper colored) vertical pole antennas (actually some form of broadband collinear array under a fiberglass radome) about 10-12 feet long and maybe 6 inches in diameter. These are usually located in groups of 4 or more arranged in a square and mounted well above the Hogg microwave horns way at the top of the tower. They have little pointed lightning rods on top. Some of these sites are also E/F sites, but GEP and E/F sites serving an area are not always co-located. Some other GEPs use smaller antennas mounted on telephone poles in the ground. Virtually all GEP sites (but not all E/F sites) have hardened underground bunkers and are manned 24 hours a day. Many are at the junctions of multiple underground cable, fiber, and microwave routes.

AF-1 uses 2 of the UHF multiplex voice channels as direct connections into the Andrews DSN switch and two into a backup DSN (Autovon) switch. These provide outward and inward direct DTMF dialing capability on the DSN to the CSO's on the plane. These channels are sometimes referred to as the "circuits" or "Autovons", but much more commonly called "Alpha" and "Bravo".

When placing a call from the plane it is customary for the CSO on AF-1 (there are actually 3 of them on 28000) to dial the White House Switchboard (called "Signal" in this context) on these DSN lines and ask them to complete the call; if the party is not immediately available the Switchboard dials back on one of the DSN lines when whoever is being called is found and the CSO dials whoever was requesting the call back on the aircraft's (clear voice) PBX to complete the connection. Often this process takes a while and is coordinated over one of the other voice circuits with messages such as "put the call on the Alpha". Calls originated from the White House Switchboard are handled much the same way.

The 4 DSN lines are also sometimes used by the flight crew and radio operators (CSOs) to directly dial DSN numbers (not routing via "Signal") such as the aviation weather forecast office and various Andrews (Brandywine) communications facilities. They are rarely if ever used for incoming DSN dial-in traffic from other than the White House Switchboard.

In addition to these four lines, in 1989-1990 the Nightwatch



UHF-LOS system installed in the bigger SAM VIP aircraft was expanded to include more lines (going from 4 channels at 12-28 khz to 12 channels at 12-60 khz which was already the PACCS standard used with the command planes). Two of these additional lines provide a direct connection to the commercial POTS/DDD network and are used only in the outgoing direction, and two provide bi-directional ringdown connections directly to the White House Switchboard ("Crown"). The others lines seem rarely used. The ringdown lines are also used (in addition to the dial up DSN "Alpha" and "Bravo" lines) to complete calls to the plane via the White House Switchboard. The POTS/DDD lines are sometimes used by the CSO's and flight crew to directly calls home to report the plane's arrival time.

The DSN lines have also been used recently to provide a secure high speed data circuit using STU-II's. This circuit carries fax to and from the plane and probably various other kinds of digital traffic. Both the DSN lines and the direct White House ringdown lines have also occasionally been used with STU-III's and AN/DVT secure digital voice terminals to provide secure voice connections via the UHF-LOS system.

The primary current use of the AF-1 UHF-LOS voice circuits has been to provide non-secure clear telephone connections for middle and junior members of the White House Staff and the Secret Service and military personel on the plane. These lines are occasionally also used to relay news releases from the press office on the plane to the wire services and networks on the ground. Years ago, before the secure UHF satellite system was in full service, they were the primary channels over which the senior White House staff and sometimes the President made most calls. Obviously there were some interesting conversations on them in that era. But more recently with the increased consciousness of the insecurity of any kind of non encrypted radio communications system most of the traffic is very routine.

The UHF LOS system is also used for AF-2 communications on occasion and regularly for communications with the large 707 VIP (VC737B) aircraft carrying the Secretaries of State and Defense on trips abroad.

The Gulfstream C-20 used by President Clinton for shorter hops does not currently carry the UHF LOS system.

#### HF Backup Systems

In addition to these primary systems there are several backup systems.

The most important of these is the Mystic Star HF-SSB network, which is a world wide network of remotely operated HF-SSB transmitter and receiver sites linked by switched DSN lines and some leased lines to

a control center near Andrews (Brandywine Md.). All are located at or near military bases (mostly Air Force), and can be tuned, keyed, and the antennas selected and pointed from consoles at Andrews. Most of the antennas are huge rotatable HF log periodics.

Andrews selects sites and frequencies to maintain continuous HF-SSB voice contact (on the "primary") with AF-1 (also AF-2 and certain of the other SAM VIP aircraft). Frequencies used come from a list of more than a hundred throughout the HF spectrum. When the President is aboard (and the plane is really called AF-1) this voice circuit is also patched into the White House Switchboard to provide a backup link if other channels are unavailable.

Most of the traffic on this HF circuit has to do with coordinating the other HF-SSB circuit (the data circuit), but occasionally it is used to coordinate other communications systems, and when the plane is out of range of the VHF/UHF systems it is occasionally also used to provide phone patches (usually on trips overseas). Back in the 60's and early 70's before the all the UHF and Satellite systems were fully deployed the HF-SSB systems were used for much greater amounts of telephone traffic, and a second HF-SSB voice circuit was also often used for additional telephone traffic. Now there is little traffic on the HF voice link, and most of that extremely routine.

The HF-SSB voice circuit always carries departure and arrival messages patched to the the Air Force Operations Center in the Pentagon (presumably to test that such connections are possible in a war emergency).

The other HF-SSB circuit is a full duplex encrypted data circuit code named "India Oscar" that uses DSP based HF modems (MIL-188?) operating over HF-SSB radios. This circuit is used with a KG-84 crypto and a GRID laptop to provide secure message (email, etc) communications between AF-1 and the White House Situation Room via its "Com Center". It is the circuit referred to by comments such as "meet me on the keyboard". I believe it may occasionally be used for secure fax, and possibly for other data traffic. Until 1989 this circuit used lower speed 4 tone anti-multipath modems (TE-204) and ran at 75 baud baudot with occasional circuit testing and unclassified message traffic (propagation forecasts and weather forecasts and the like) to and from Andrews and the plane in the clear.

#### Other systems

In addition to the UHF radio systems, the aircraft is equipped to communicate on the VHF federal hi band DES/DVP encrypted full duplex secure voice system primarily used to provide a secure telephone circuit to the presidential limo. This system, code named Yankee/Zulu after the two White House frequencies it uses (Yankee and Zulu), is provided

by WHCA and permanently installed around Washington DC and presidential vacation homes. It is usually installed on a temporary basis at the site of a presidential visit (although there has been some recent use of STU-III's over regular cellphones to provide an alternative). Calls via this system are routed through the White House Secure Voice Switchboard ("Royal Crown"). Portable units operating on this system were confused with cellphones in the news media when President Bush was photographed talking on them while golfing.

This system (Y/Z) is occasionally used from AF-1 to complete calls during landing and takeoff. It is not used enroute.

AF-1 also carries a GOLAY paging transmitter, and no doubt various cellphones (although these are not used from the air).

And needless to say the aircraft can communicate on most of the standard Secret Service Presidential Protection VHF and UHF radio channels. These are DES/DVP secured (with occasional nbfm clear voice once and while). These are not normally used for telephone traffic.

And of course there is normal VHF and UHF AM air to ground capability.

WHCA may possibly have installed or intend to install INMARSAT capability on AF-1 (INMARSAT has occasionally been used for Presidential support), but my information is not definite one way or the other on this.

#### Disclaimer

AF-1 is no doubt also equipped with classified ("black") radio systems (such as perhaps a secure HF voice capability and Milstar), but the ones I have described are to the best of my knowledge the ones that can be received (or at least detected) on normal radio gear, and are almost certainly the channels over which the calls referred to on Nationwide flow.

There is much more specific detail I have omitted, some of it because it not relevant to an overview, and some of it because it may in some way be sensitive or not generally known. This post is meant to answer some of the questions from scanner-type listeners that come up from time to time in the radio newsgroups; actual information on the frequencies used (somewhat accurate) and some of the site locations can be found in various hobbist publications.

David I. Emery, Senior Technical Consultant (and notorious fraud)  
UUCP: ...uunet!jjmhome!pig!die Internet: die@world.std.com

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Date: Mon, 7 Jun 93 16:17:18 EST  
From: pa.dec.com!nl.nuwc.navy.mil:greg%willie.nl.nuwc.navy.mil!@decwrl.dec.com  
Subject: HW-100 versus HW-101 ???  
To: info-hams@ucsd.edu

Does anyone out there know the difference between a Heathkit HW-100 and the later model HW-101?. Reply here or to me at greg@wasik.nl.nuwc.navy.mil.  
Thanks....

...Greg

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Date: Mon, 7 Jun 1993 19:45:25 GMT  
From: sdd.hp.com!col.hp.com!news.dtc.hp.com!srigenprp!alanb@network.UCSD.EDU  
Subject: tuning an HF rig  
To: info-hams@ucsd.edu

Richard Chapman (chapman@cs.cornell.edu) wrote:  
: This weekend I got my first HF rig, a Drake TR-4CW. Now, I have no  
: HF exeperience, and I find the instructions for tune-up somewhat  
: daunting -- it sounds like it is awfully easy to toast your radio.  
: The big problem is that i don't understand what I am doing -- I'm  
: just following instructions -- twiddling knobs labelled XMITTER GAIN,  
: PLATE, RF TUNE, and LOAD based on what a meter showing PLATE CURRENT  
: says.

I guess it's asign of the times that few hams these days know how to tune up a pi-network. Virtually all tube-type transmitters used a pi-net to match the high-impedance tube output to the 50-ohm antenna. Solid-state rigs require no tuneup. The tradeoff is that tube rigs can work with higher-SWR antennas.

The pi-network adjustments are the PLATE TUNE and PLATE LOAD controls. The PLATE TUNE control adjusts the pi-net to resonance, and the PLATE LOAD control adjusts the impedance transformation ratio from antenna to tube plate (output). The way to keep from frying your output tubes is to make sure the PLATE TUNE control is always adjusted properly before you run the drive level up to full power.

The GAIN (a.k.a. DRIVE LEVEL) control adjusts the drive level to the final amplifier, and the RF TUNE (a.k.a. GRID TUNE or PRESELECTOR) control adjusts the tuning of the tuned circuit at the PA input. You adjust the RF TUNE control for peak output power and adjust the GAIN control for the desired power level.

The tune up procedure I use is: (1) pre-set the LOAD control max CCW

(min loading) and PLATE TUNE and RF TUNE in the center of the range for the band in use. (2) Put the rig in tune mode and turn up the GAIN control until you see the plate current meter increase slightly from the resting value. (3) Adjust the RF TUNE control for peak plate current, then QUICKLY adjust the PLATE TUNE control for minimum current. Once the plate is tuned correctly, the final amplifier is happy, and you are in little danger of frying the PA tube(s). (4) Adjust the GAIN control until plate current or output power just reaches maximum. (5) Now adjust the PLATE LOAD control. I do this by watching for maximum power on a watt meter, but you can also adjust for a particular value of plate current as specified in the manual. Since PLATE LOAD and PLATE TUNE interact somewhat, re-adjust PLATE TUNE. You can either adjust PLATE TUNE for minimum plate current or maximum power output -- they should occur at nearly the same adjustment point.

Most amateur transmitters are not designed for a 100% duty cycle, so don't spend all day tuning up the radio. Rigs like the TR-4 use sweep tube finals which are a bit delicate -- I wouldn't run full power for more than 30 seconds or so at a time.

You are right that the procedure is much easier if you have some idea of what each control is supposed to do. Once you get the hang of it, it only takes a few seconds -- it's much quicker to do than to describe.

AL N1AL

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Date: 7 Jun 1993 20:00:20 GMT  
From: usc!howland.reston.ans.net!noc.near.net!transfer.stratus.com!sw.stratus.com!fms@network.UCSD.EDU  
Subject: WANTED FT-101ZD, Radios in movies  
To: info-hams@ucsd.edu

In article <2C138DFE.25376@ics.uci.edu>, turner@safety.ics.uci.edu (Clark Savage Turner) writes:

> In <6569@gold.gvg.tek.com> randyhgvgadg.gvg.tek.com (Randy Hall) writes:

>

> .....

> >oh, I know that the FT101ZD can work 2 meters, I saw done in the movie

> >Cliffhanger!!

>

> The Anderson Tapes - saw the kid use an HW-101 to get help.

> The Godzilla movies (forget which one) - saw a Yaesu FTdx 560 used as  
> part of a "death ray" weapon.

> Buckaroo Banzai - this little kid keeps in touch with Buckaroo with a Kenwood  
> TS-520.

>

>

I hadn't noticed the one in Buckaroo Banzai until recently, and even then I didn't notice the type of radio. But I always knew Buckaroo was cool...

My favorite -- "The Rescuers Down Under"! No specific radio manufacturer, but the mice are definitely using HF to get their emergency message from Australia to NYC... :-)

--

Faith M. Senie	InterNet: fms@vos.stratus.com
Stratus Computer, Inc.	InterNet: fms@hoop.sw.stratus.com
55 Fairbanks Blvd.	Pkt Radio: n1jit@wa1phy.ma.usa.na
Marlboro, MA 01752	Phone: (508)460-2632

"I'm afraid I don't know very much about Romulan Disruptor settings" --Spock

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End of Info-Hams Digest V93 #692

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